1. (currently amended) An apparatus for filling and cleaning an analytical substrate of the type having microchannels, said microchannels having a plurality of inlet ports and a plurality of anode ports separated by a length of the microchannel, comprising:

an arm mounted on the apparatus such that the arm may be raised and lowered;

a tube-in-tube assembly having a plurality of tube assembly pressure tubes and a plurality of tube assembly vacuum tubes paired one inside the other;

a manifold mounted on said arm upon which said tube in tube assembly is mounted, said tube in tube assembly allowing a pressurized liquid to be distributed by said manifold into said pressure tubes and a vacuum source to be distributed by said manifold to said vacuum tubes; and ~~in fluid communication with said substrate for distributing solution from a container to inlet ports of said microchannels and for removing by suction solution from said substrate inlet ports with a vacuum source;~~

an injector mounted on said arm, wherein when said arm is lowered, ends of said pressurized tubes seal over inlet ports on said substrate and said injector also seals over an anode port on said substrate. ~~in pressure communication with the substrate for injecting a liquid media into the microchannels through an anode port of said substrate wherein each of said plurality of microchannels is formed on a surface of said substrate and has an inlet port defined at an end thereof; and~~

~~a tube-in-tube assembly having a plurality of tube assembly pressure tubes and a plurality of tube assembly vacuum tubes paired one inside the other for fluidic and pressure communication with said manifold and said inlet ports of said substrate.~~

2. (canceled)

3. (currently amended) The apparatus of claim 1 wherein the manifold has a first chamber for providing pressurized solutions from a pressurized ~~said~~ container to said substrate and a second chamber for vacuuming solution from said substrate with ~~said~~ a vacuum source.

4. (currently amended) The apparatus of claim 3 wherein said first chamber of said manifold ~~means~~ is above the second chamber of said manifold.

5. (currently amended) The apparatus of claim 4 wherein said first chamber of the manifold includes ~~comprises~~ a plurality of first compartments.

6-8. (canceled)

9. (currently amended) The apparatus of claim [[8]] 3 wherein said plurality of pressure tubes of said tube-in-tube assembly is inserted into ~~said~~ a plurality of openings on ~~said~~ a lower surface of said first chamber of the manifold.

10. (currently amended) The apparatus of claim 4 wherein said second chamber of the manifold comprises a plurality of second compartments.

11. (currently amended) The apparatus of claim 10 wherein said second chamber of the manifold comprises three second compartments.

12. (currently amended) The apparatus of claim 10 wherein said second compartments have at least one opening.

13. (currently amended) The apparatus of claim 12 further comprising at least one vacuum supply tube connected to ~~said~~ a vacuum source and inserted into the openings of said second compartments.

14-15. (canceled)

16. (currently amended) The apparatus of claim ~~15~~ 4 wherein said plurality of pressure tubes of said tube-in-tube assembly are inserted into said plurality of vacuum tubes of said tube-in-tube assembly.

17-18. (canceled)

19. (currently amended) An apparatus for filling and cleaning an analytical substrate of the type having microchannels including a plurality of input ports and a plurality of anode ports separated by a length of said microchannel ~~therein~~ comprising:

a container ~~said container~~ storing a liquid solution;

a vacuum source;

an arm that may be raised and lowered over a substrate having microchannels and microchannel openings;

a manifold mounted on said arm joined to said container and said vacuum source such that said manifold could distribute liquid solution and vacuum from said container and vacuum source;

~~a manifold in fluid communication with said substrate in~~ a tube in tube assembly extending from said manifold, wherein lowering of said arm allows tubes in said tube in tube assembly to seal over input ports on said substrate allowing solution distribution ~~communication~~ from said container to inlet ports of said substrate and ~~in solution~~ also allowing solution removal ~~communication~~ by suction through said tube in tube assembly from said substrate inlet ports; and

an injector mounted on said arm, wherein lowering said arm brings the injector in pressure communication with the anode ports, wherein said tube in tube assembly and said injector allow sealing of both input ports and anode ports when said arm is lowered. ~~substrate injecting a liquid media into a plurality of microchannels through an anode port of said substrate wherein each of said plurality of microchannels is formed on a surface of said substrate and has an inlet port and is associated with an anode port.~~

20-23 (canceled)

24. (currently amended) The apparatus of claim 19 further comprising a platform ~~having alignment pins~~ for holding said substrate.

25. (canceled)

26. (currently amended) The apparatus of claim ~~25~~ 19 further comprising ~~an adjustable stop~~ a means for positioning said manifold.

27. (currently amended) The apparatus of claim ~~25~~ 26 further comprising a sensor assembly indicating when ~~said manifold~~ the arm has been lowered.

28. (original) The apparatus of claim 19 wherein said injector has at least one spring loaded injector tip.

29. (original) The apparatus of claim 19 wherein said manifold has a first chamber for providing pressurized solutions from said container to said substrate and a second chamber for vacuuming solution from said substrate with said vacuum source.

30. (currently amended) The apparatus of claim 29 ~~wherein~~ further comprising first and second compartments within said chambers and a separate control associated with said first and second compartments.

31. (canceled)

32. (currently amended) The apparatus of claim 19 ~~wherein operation~~ further including a means for automated operation of said apparatus ~~is automated~~.

33. (currently amended) An apparatus for filling and cleaning an analytical substrate of the type having microchannels ~~therein~~ including a plurality of microchannel inlet ports and a plurality of microchannel anode ports, said inlet ports and anode ports separated by a length of said microchannel comprising:

a container ~~configured to hold a solution~~;

a vacuum source;

an arm that may be raised or lowered over the substrate;

a manifold mounted on the arm in pressure tight fluid communication with said container and vacuum source providing ~~solution~~ from the container to said substrate and vacuuming solution from said substrate with said vacuum source, said manifold having an upper chamber ~~with~~ having a plurality of first compartments ~~with opposed openings and~~ having a plurality of openings on a lower surface of each of said plurality of first compartments, and a lower chamber ~~with~~ having a plurality of second compartments ~~with opposed openings, and~~ having a plurality of openings ~~an~~ on a lower surface of said plurality of second compartments, wherein said plurality of openings on said lower surface of said lower chamber are larger than said plurality of openings on said lower surface of said upper chamber first compartments; ~~and~~

a plurality of pressure supply tubes inserted into ~~opposed~~ openings of said upper chamber first compartments and

~~connected to said at least one~~ in fluid communication with said container through said manifold;

a plurality of vacuum supply tubes inserted into said opposed openings of said lower chamber second compartments and ~~connected to said at least one~~ in vacuum communication with said vacuum source through said manifold; ~~and~~

an assembly for fluidic and pressure communication with said first compartments of said upper and lower chambers of said manifold and inlet ports of said substrate wherein said assembly allows for simultaneous distribution and suction of fluid to and from said substrate and said upper and lower chambers of said manifold; [[.]] and

an injector mounted on said arm such that when said arm is lowered the injector is in pressure communication with the substrate for injecting a liquid media into the microchannels through ~~an~~ the anode ~~port~~ ports of said substrate wherein each of said plurality of microchannels is formed on a surface of said substrate and has an inlet port[[;]].

34. (withdrawn) A method for cleaning an analytical substrate of the type having microchannels therein comprising:

(a) engaging a plurality of inlet ports of said substrate with a device for providing wash solution and suction into said substrate;

(b) engaging an anode port of said substrate;

(c) simultaneously introducing solution into said plurality of inlet ports and removing by vacuum solution from said inlet ports;

(d) introducing solution into a plurality of microchannels through said anode port wherein each of said microchannels is formed on a surface of said substrate and has an inlet port;

(e) repeating steps (c) and (d) until said plurality of microchannels on said substrate have been cleaned; and

(f) vacuuming remaining solution.

35. (withdrawn) The method of claim 34 wherein steps (a) and (b) occur independently of each other.

36. (withdrawn) The method of claim 34 further comprising the step of filling said microchannels with separation media through said anode port.

37. (withdrawn) The method of claim 36 further comprising robotically moving said microchip substrate to a loading station or a storage station.

38. (withdrawn) The method of claim 37 whereby following robotically moving the substrate the method of further includes the steps of:

i) moving a loading device relative to sample wells containing sample, the sample having tagged target molecules with characteristic migration rates, and picking up sample with said loading device;

ii) delivering said sample from the loading device into the inlet ports;

iii) repeating steps i) and ii) until a desired number of inlet ports have received sample; and

iv) causing sample separation in the microchannels until desired sample separations are achieved.

39. (withdrawn) The method of claim 34 wherein said method occurs after said substrate has been used in a molecular separation and microchannel chemical analysis process.

40. (withdrawn) The method of claim 34 wherein said method occurs robotically.